

A Range-wide Assessment of Port-Orford-Cedar (*Chamaecyparis lawsoniana*) on Federal Lands

Port-Orford-Cedar
Assessment
Report

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Cover Photo: Stand of Port-Orford-cedar displaying a variety of age groups and levels of health on the South Fork of the Coquille River, Oregon

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Executive Summary

This assessment, a coordinated effort between the U.S. Department of the Interior Bureau of Land Management (BLM) and the U.S. Department of Agriculture Forest Service, describes associated ecological factors, pathology, and genetics of Port-Orford-cedar (*Chamaecyparis lawsoniana*). It also explores social and economic factors that may influence potential management strategies for the species on federal lands.

Port-Orford-cedar is a valuable tree with a limited natural range in southwestern Oregon and northwestern California. Port-Orford-cedar occurs on five National Forests, three BLM Districts, one National Park, and one National Monument, as well as on tribal, state, county, and private lands.

Port-Orford-cedar plant associations display some of the richest and most varied shrub and herbaceous plant associations in the region. Eleven rare and sensitive plant species are found exclusively in Port-Orford-cedar associations. Many of these plant associations in the southern part of the tree's range occur in very restricted areas, mostly in wetlands or riparian areas, where the impacts of Port-Orford-cedar root disease can have noteworthy effects. Port-Orford-cedar can contribute a high percentage of stream shading. Loss of this ecosystem function can detrimentally impact other resources such as water quality and fish habitat.

Port-Orford-cedar is affected over much of its range by *Phytophthora lateralis*, a virulent, non-native root pathogen that is believed to have been introduced into the host's native range in the early 1950s. *P. lateralis* kills Port-Orford-cedars of all ages that are growing on sites favorable for disease development. Once an area becomes infested, it is difficult, if not impossible, to eradicate the pathogen.

P. lateralis can spread rapidly if preventive actions are not taken to slow or stop it. Most spread of Port-Orford-cedar root disease occurs in the cool, rainy months of the year, usually from October 1 through May 31. The greatest disease impacts are encountered among hosts growing in wetlands and riparian zones. Port-Orford-cedars growing in upland situations often escape infection even when the pathogen is established in low-lying areas or nearby drainages.

Approximately 91 percent of Forest Service and BLM land within the range of Port-Orford-cedar in Oregon and California is uninfested with *P. lateralis*. Within the Riparian Reserve land allocation, it is estimated that 87 percent of the area is uninfested.

Low genetic variability--measured by differences in survival, growth, and vigor--has been demonstrated within populations growing in different parts of the tree's range. Growth differences are most noteworthy at different elevations and on different soil types. Breeding zones, within each breeding block, based on elevation bands have been delineated for the purpose of maintaining site adaptability in the Port-Orford-cedar breeding program.

A small amount of natural resistance to *P. lateralis* has been shown to exist in some Port-Orford-cedar populations and appears to be heritable. An effort is underway by the federal agencies and Oregon State University to further identify and enhance root disease resistance in Port-Orford-cedar.

A variety of management techniques are used to decrease the probability, or prevent the spread, of *P. lateralis* in existing Port-Orford-cedar stands on federally-administered land. These include: planning access routes and timing projects to minimize the likelihood of *P. lateralis* spread; vehicle and equipment washing; vehicle exclusion; temporary road

closures; integrating disease treatment with road design, engineering and maintenance; roadside sanitation; using care in water source selection and treatment; educational efforts; and genetic resistance breeding.

Port-Orford-cedar root disease management may involve a combination of disease management techniques that reduce the probability of disease spread and intensity across a landscape. Major factors to consider with root disease management are the occurrence and distribution of Port-Orford-cedar and *P. lateralis* in a planning area, the occurrence, locations and use patterns of roads, and the locations of streams and drainage patterns.

The objective of this document is to provide information to assist managers in maintaining Port-Orford-cedar throughout its range, both in presence and ecological function.